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ABSTRACT

This paper presents a study designed to determine if providing information to primiparous mothers about the behavioral characteristics of their infants would affect reciprocity in mother-infant interaction. Thirty married, Caucasian, middle class mothers of healthy, normally carried and delivered 48-hour-old first-born infants served as subjects. Mothers were randomly assigned to one of three treatment groups: (1) observation of infant behavior assessment and feedback on infant's responses, (2) feedback, but no observation, and (3) instruction on selection and purchase of infant furnishings, and no observation or feedback (as a control). Pre-treatment assessment of mother's reciprocity indicated no differences among the groups. Post-treatment assessment was conducted seven to 10 days following treatment. Analysis of variance across three treatment groups and two times of observation indicated that mother-infant interaction in all groups increased significantly over time. A treatment by time interaction effect was obtained on maternal and infant behavior assessment subscale scores. Results of additional analyses suggest that information alone (Group 2) or information plus demonstration (Group 1) are effective means of increasing infant behavior subscale scores. Data also suggest that information plus demonstration is more effective than information alone in increasing mother-child reciprocity scores. Informing mothers about the behavioral characteristics of their first-born infants is an effective way of enhancing mother-child interaction. (Author/RH)

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INFORMING MOTHERS ABOUT THE BEHAVIORAL CHARACTERISTICS OF THEIR INFANTS: EFFECTS ON MOTHER-INFANT INTERACTION

Paper to be presented at the biennial meeting of the Society for Research in Child Development

March, 1979

San Francisco, California

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INFORMING MOTHERS ABOUT THE BEHAVIORAL CHARACTERISTICS OF THEIR INFANTS: EFFECTS ON MOTHER-INFANT INTERACTION

Differences between primiparous and multiparous mothers' patterns of interactions with their newborn infants have been noted in a number of recent studies. While primiparous mothers stimulate their infants more, hold them more snugly, and are generally more active in their interactions with their infants, they tend to be less effective in the tasks of parenting. Their behavior with their infants is less smooth, involves less finesse, and is characterized by less reciprocity and communicative dialogue. Other recent data suggest an explanation for these differences. Multiparous mothers have been found to agree more strongly that infants are capable of playing an active role in determining the course of mother-infant interactions--that is, they have a better understanding of the process of reciprocity than do primiparous mothers. Further, observations of these mothers indicated that their infants did in fact play a greater role in the interactive process in ways that reflected greater reciprocity. It may be that primiparous mothers simply do not have as much knowledge about the nature of the newborn infant--that is, about infant competence and about an infant's capability to be sensitive and responsive to a caregiver.

In order to test whether a greater familiarity with infant competence and specific infant characteristics would result in increased reciprocity in mother-infant interaction for primiparous mothers and their infants, a study was conducted in which mothers were informed about the behavioral characteristics of their infants and assessments were made to determine the effects of this information on reciprocity in mother-infant dyadic interactions.

Thirty primiparous mothers of female newborn infants served as subjects. All mothers were married, Caucasian, and middle-class. Deliveries were vaginal under local or regional anesthesia. All infants were breast fed and were full-

term. Mothers had normal pregnancies, labors and deliveries, and infants were healthy as assessed by the Obstetrical and Postnatal Complications Scale, developed by Bruce Littman and Arthur Parmelee, 1974.

Mothers were randomly assigned to one of three treatment groups: 1) group one mothers observed the investigator performing the Brazelton Neonatal Behavioral Assessment Scale (BNBAS) on their infants and received concurrent feedback relating to the infants' responses; 2) group two mothers were given a verbal description about the behavioral characteristics of their infants as assessed by the BNBAS (the investigator performed the BNBAS while infants were in the nursery and gave mothers verbal feedback following the assessment); 3) group three (control mothers) received instruction on the selection and purchase of infant furnishings. The three groups were equivalent on the following variables: parental age, parental occupation, parental education, infant weight, age of the infant when the BNBAS was administered, and parental preferred sex of the expected infant, and infant characteristics as assessed on the BNBAS. The duration of the intervention session was approximately the same for mothers in all three groups.

Reciprocity between mother and infant was assessed during a feeding using the Maternal-Infant Adaptation Scale (MIAS). This scale was developed by Gail M. Price, Ph.D. The first observation was made, prior to intervention, when infants were approximately two days of age. A one way analysis of variance with planned comparisons of these data revealed no differences among the groups at observation one (prior to treatment intervention).

The interventions followed the first observation of reciprocity and occured when the infants were approximately forty-eight hours of age. A week to ten days following the intervention, reciprocity was again assessed during a home visit (the infants were ten to twelve days of age). The MIAS, the same scale as was used at observation one, was used for this post test of treatment effects.

The twenty-one items on the MIAS were divided into three subscales and cluster scores were formed: a maternal cluster, an infant cluster, and an interactive cluster. Items on the maternal cluster included:

Spatial distance
Maternal holding style
Maternal expression of affect
Maternal vocalization style
Style of burping
Non-feeding caregiving style
Maternal modulation of stimulation-distress
Response to changing level of infant motor activity
Maternal visual interaction
Maternal stimulation of infant
Stimulation to feed
Response to satiation
Frequency of previous category of behavior (response to satiation)

The infant cluster consists of five items:

Predominant infant wakeful response level
Infant distress
Predominant infant mood/affect
Infant visual interaction
Infant response to stimulation to suck (following satiation)

The interaction cluster consists of three items:

Locus of control in feeding--initiation
Locus of control in feeding--cessation
Maternal response to infant excitation or pleasure

These scores were submitted to a 3 (treatment group) X 2 (time of observation) analysis of variance with repeated measures.

These analyses revealed the following results: 1) all three groups increased significantly from observation one to observation two on all three MIAS clusters and 2) a treatment by time interaction effect was obtained on the maternal cluster and on the infant cluster. Further analyses were performed to determine the nature of the interaction effects: three 2 (treatment) by 2 (time) analyses were calculated for each MIAS cluster. These analyses compared groups one (demonstration) and three (control), groups one(demonstration) and two (information only) and groups two (information only) and three (control). For the maternal cluster of the MIAS the group observing the demonstration began lower than the control

group at pretest but greatly exceeded the control group at posttest. Thus, for the analysis on the maternal cluster, the demonstration was effective in significantly increasing reciprocity scores at observation two. For the infant cluster of the MIAS, mean scores of the demonstration and control groups approximated each other at pretest. At posttest there was a minimal increase for the control group while the demonstration group revealed a significantly greater increase. When the control group and the information only group were compared on the infant cluster, the information only group mean scores were lower at pretest than the control group. At posttest, however, the information only mean scores were significantly higher than the control group mean scores. For the infant cluster these data suggest that information alone or information plus the demonstration are effective means of increasing the scores on the infant cluster. For the maternal cluster of the MIAS the information only group mean scores at pretest were higher than the demonstration group mean scores. At post test the information only group demonstrated a slight increase in mean scores, however, the demonstration group obtained an increase at posttest which approached significance. For the maternal cluster, data suggest that information with the demonstration is more effective in increasing reciprocity scores than the information alone. Thus, providing these mothers with information regarding the behavioral characteristics of their infants increased reciprocity in mother-infant interaction from observation one to observation two in the maternal and infant behavioral clusters of the MIAS.

Recall that a significant main effect for time was obtained. In other words, mothers in all three groups increased significantly in reciprocity from two to twelve days. At the time of the first observation of feeding was made, mothers and infants were only beginning to establish consistent patterns of behavior within the feeding interaction. All infants were breast fed, and

at two days postpartum many mothers in the study expressed frustration about the feeding. By ten to twelve days, however, mothers reported that most of the frustrations regarding breast feeding had been solved due to time and contract with the infants.

These results are similar to those of Thoman et al. (1972) who found that primiparous mothers engaged in more feeding intervals, and fed longer, but that their infants consumed less than multiparous mothers. Evidently, the excess stimulation infants received from primiparous mothers interfered with feeding.

Reciprocity, as assessed on both the infant and interaction cluster of the MIAS also increased significantly from observation one to observation two. At first these two clusters may seem unrelated to maternal behaviors; however, maternal behaviors do influence infant and interactive cluster behaviors. During the early periods following the infants' births, mothers are learning to read the cues of their newborns and to respond appropriately to the needs of the infants. As reciprocal mothers become more predictable in their responses to their infants' cues, the infants become more consistent in their own behaviors.

When treatment differences are considered, several statements may be made. It was expected that mothers who saw, as well as heard, about the infants' behavioral responses would increase in reciprocity significantly greater than mothers in the other two groups. Since the opportunity to observe the investigator elicit the responses was provided only once, and there was little chance that other nurses would have also provided this type of model. the best explanation for the increase in Group I over II is that additional information was provided via the visual mode. It was expected that clarification would occur, but it appears that new information also may have been provided. The additional information provided when mothers were allowed to see as well as hear information

about their babies' behavioral characteristics may have been responsible for the significant increase in maternal cluster reciprocity scores at observation two for Group I compared with either other group.

Results concerning changes in the infant cluster scores on the MIAS present a different pattern. Significantly different rates of change (interaction effect) were found between Groups II and III on the infant cluster scores. Differences between mean scores for groups I and III approached significance (interaction effect). Thus, it would appear that providing information to mothers about the behavioral characteristics of their infants was, to some degree, responsible for a significant (or near significant) increase in reciprocity scores at observation two.

Significnat increases in reciprocity scores on the infant cluster may be better understood when the relationship between the BNBAS and behaviors observed on the infant cluster of the MIAS is clarified. Information provided on the BNBAS approximates behaviors observed on the infant cluster of the MIAS. Information that was provided to mothers in either groups I or II was therefore directly relevant to what occurred in feeding interactions even when mothers had not seen the BNBAS performed. On the other hand, the relationship between the BNBAS and the maternal cluster is a more subtly one. Information that is provided on the BNBAS may be unique enough that visualization of the infant's responses may be necessary in order for the mother to alter her behavior to become more sensitive to the baby. Perhaps, on the infant cluster, providing information to mothers about their infants' behavioral characteristics enables them to optimize those behaviors of their newborns as reflected on the infant cluster of the MIAS. It is quite likely that mothers in Groups I and II altered their own behavior in order to elicit infant behaviors; however, the changes in maternal behaviors may not be the same as those behaviors assessed on the maternal cluster of the MIAS.

On the interactive cluster of the MIAS the reciprocity scores of dyads from all three groups increase from observation one to observation two. However, no significant interaction effect was obtained although the significant main effect for time was obtained. A possible explanation for this general finding may lie in the content of material presented in the BNBAS and the items assessed on the interaction cluster of the MIAS.

Two of the three items on the interaction cluster relate to locus of control of the feeding. Content presented to mothers in both Group I and II did not relate to the method of feeding context. The lack of differences in the three groups may be explained due to the lack of similarity between content presented in the teaching session and the behaviors observed on the interactive cluster of the MIAS. Had the information presented been more similar to behaviors assessed, discrimination among the groups would have been expected.

Based on these data, further study is recommended in the following areas:

1. Further studies need to be undertaken in the measurement of mother-infant interaction.
2. It is recommended that the present study be replicated using a larger sample and different populations in order to make findings more generalizable.
3. It is recommended that further research be conducted into the mode and time of presentation of stimuli.

The study has several implications.

1. While clear-cut consistent results were ont obtained across MIAS clusters, results of data analysis indicate that informing mothers about the behavioral characteristics of their infants is an effective means of enhancing the interaction between a mother and an infant. For the amount of time and money involved in informing mothers about the behavioral characteristics of their infants, the results of

(increase in reciprocity) warrant the expenditures.

2. Feeding times are appropriate times to assess mother-infant interaction. During feeding times social and caregiving activities can be observed. Feeding periods also provide an opportunity to perform some aspects of the teaching related to the infants' behavioral characteristics. The NIAS is an acceptable instrument with which to rate reciprocity as it can be easily learned by the sensitive observer and requires no elaborate equipment.

Table 4

Summary of Results for the 2 X 2 Repeated Measures

Analysis of Variance for Groups One and Three Using the

MIAS Material Cluster as the Dependent Variable

Source	Sum of Squares	df	Mean Squares	F-Test	p*
Groups	62.50	1	62.50	.86	.369
Pre-Post	774.40	1	774.40	32.27	.000
Group by Pre-Post	220.90	1	220.90	9.78	.010
Subjects in Groups	1307.10	18	72.62		
Pre-Post by Subjects in Groups	406.70	18	22.60		

* Program computes exact probabilities

Table 2

Summary of Results for the 2 X 2 Repeated Measures

Analysis of Variance for Groups One and Three Using the
MIAS Infant Cluster as the Dependent Variable

Source	Sum of Squares	df	Mean Squares	F-Test	p *
Groups	11.03	1	11.03	1.31	.267
Pre-Post	27.23	1	27.23	6.31	.021
Group by Pre-Post	15.63	1	15.63	3.62	.070
Subjects in Groups	151.85	18	8.44		
Pre-Post by Subjects in Groups	77.65	18	4.31		

* program computes exact probabilities

Table 3

Summary of Results for the 2 X 2 Repeated Measures

Analysis of Variance for Groups One and Three Using the

MIAS Interaction Cluster as the Dependent Variable

Source	Sum of Squares	df	Mean Squares	F-Test	p*
Group	22.50	1	22.50	3.60	.071
Pre-Post	84.10	1	84.10	23.65	.000
Group by Pre-Post	.90	1	.90	.25	.626
Subjects in Groups	112.40	18	6.24		
Pre-Post by Subjects in Groups	64.00	18	3.56		

* program computes exact probabilities

Table 4

Summary of Results for the 2 X 2 Repeated Measures Analysis of Variance for Groups II and III Using the MIAS Maternal Cluster as the Dependent Variable

Source	Sum of Squares	df	Mean Squares	F-Test	p*
Group	140.63	1	140.63	1.44	.245
Pre-Post	164.03	1	164.03	4.95	.037
Group by Pre-Post	.03	1	.03	.00	.977
Subjects in Groups	1761.85	18	97.88		
Pre-Post by Subjects in Groups	596.45	18	33.14		

* program computes exact probabilities

Table 5

Summary of Results for the 2 X 2 Repeated Measures Analysis of Variance for Groups II and III Using the MIAS Infant Cluster as the Dependent Variable

Source	Sum of Squares	df	Mean Squares	F-Test	p*
Group	5.63	1	5.63	.59	.457
Pre-Post	50.63	1	50.63	12.21	.003
Group by Pre-Post	34.23	1	34.23	8.25	.010
Subjects in Groups	170.85	18	9.49		
Pre-Post by Subjects in Groups	74.65	18	4.15		

* Program computes exact probabilities

Table 6

Summary of Results for the 2 X 2 Repeated Measures Analysis of Variance for Groups II and III Using the MIAS InteractionCluster as the Dependent Variable

Source	Sum of Squares	df	Mean Squares	F-Test	p*
Group	7.23	1	7.23	.84	.375
Pre-Post	70.23	1	70.23	43.22	.000
Group by Pre-Post	.03	1	.03	.02	.898
Subjects in Groups	155.25	18	8.63		
Pre-Post by Subjects in Groups	29.25	18	1.63		

* program computes exact probabilities

Table 7

Summary of Results for the 2 X 2 Repeated Measures Analysis of Variance for Groups I and II Using the MIAS Maternal Cluster as the Dependent Variable

Source	Sum of Squares	df	Mean Squares	F-Test	p*
Group	15.63	1	15.63	.236	.638
Pre-Post	765.63	1	765.63	31.736	.000
Group by Pre-Post	225.63	1	225.63	9.352	.007
Subjects in Groups	1192.85	18	66.27		
Pre-Post by Subjects in Groups	434.25	18	24.13		

* program computes exact probabilities

Table 8

Summary of Results for the 2 X 2 Repeated Measures

Analysis of Variance for Groups I and II Using the

MIAS Infant Cluster as the Dependent Variable

Source	Sum of Squares	df	Mean Squares	F-Test	p*
Group	.90	1	.90	.11	.743
Pre-Post	122.50	1	122.50	32.47	.000
Group by Pre-Post	3.60	1	3.60	.95	.343
Subjects in Groups	149.10	18	8.28		
Pre-Post by Subjects in Groups	67.90	18	3.77		

* program computes exact probabilities

Table 9

Summary of Results for the 2 X 2 Repeated Measures

Analysis of Variance for Groups I and II Using the

MIAS Interaction Cluster as the Dependent Variable

Source	Sum of Squares	df	Mean Squares	F-Test	p*
Group	4.23	1	4.23	.51	.491
Pre-Post	87.03	1	87.03	26.62	.000
Group by Pre-Post	.63	1	.63	.19	.670
Subjects in Groups	149.25	18	8.30		
Pre-Post by Subjects in Groups	58.85	18			

* program computes exact probabilities